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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/499,618	02/07/2000	Toshio MIYAMOTO	H-890	1509

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Beall Law Offices
104 East Hume Avenue
Alexandria, VA 22301

EXAMINER

CHAMBLISS, ALONZO

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 01/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/499,618

Applicant(s)

MIYAMOTO ET AL.

Examiner

Alonzo Chambliss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 20-35 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 20-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 13 November 2001 is: a) ☒ ^{made of record} approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Pre-amendment A filed on 11/13/01 has been fully considered and made of record as Paper No. 8.

Election/Restrictions

2. Applicant's election without traverse of claims 1-13 and 20-24 in Paper No. 6 is acknowledged.

Claims 14-19 have been canceled in a supplemental response to restriction requirement filed on 10/26/01 from pre-amendment A filed on 11/13/01 in Paper No. 8.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statement submitted on 2/7/00 and 1/22/01 was filed before the mailing date of the non-final rejection on 1/13/02. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the petition is granted and the information disclosure statement is being considered by the examiner.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character " 2 " has been used to designate both leads and module

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board in Fig. 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: S16 in Fig. 8. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

7. The proposed drawing corrections filed on 11/19/01 have been ^{made of record} ~~approved by the~~ *Kc* examiner. However, the drawing corrections were made in **red ink** rather than black.

Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

8. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: " MEMORY-MODULE WITH AN INCREASE DENSITY FOR MOUNTING SEMICONDUCTOR CHIPS ".

Claim Objections

9. Claims 6 and 7 are objected to because of the following informalities: the phrase "every the row or the column" is incorrect. Applicant is suggested to change the above phrase to -- every row or column --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-13, 20, 21-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
12. Claims 1 and 2 recites the limitation "the pitch" in lines 5 and 6. There is insufficient antecedent basis for this limitation in the claim.
13. Claims 1 and 2 recites the limitation "the bonding electrodes" in lines 6 and 7, respectively. There is insufficient antecedent basis for this limitation in the claim.
14. In claim 1, the phrase "semiconductor chip" is vague and indefinite since it is not clear where the chips are located relative to the semiconductor chips.
15. In claims 1, 2, and 34, the phrase "wiring portions for expanding the pitch among the protruded terminals to be wider than the pitch among the bonding electrodes" is vague and indefinite since it is not clear how the pitch is increases the width between the protruded terminals and the bonding electrodes. Furthermore, applicant is claiming a desire result without a structure for providing the increase in pitch.

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16. In claims 21, 23, and 35, the phrase " wiring portions for expanding the pitch among the bonding pads to be wider than the pitch among the bonding pads " is vague and indefinite since it is not clear how the pitch is increases the width between two bonding pads. Furthermore, applicant is claiming a desire result without a structure for providing the increase in pitch.

17. In claims 1, 2, 4, 21, 23, 34, and 35, the phrase "to be " is vague and indefinite since the phrase " to be " implies that the anticipated function does not have to take place as claimed.

18. Claim 8 recites the limitation " a plurality of the protruded terminal semiconductor devices " in lines 1 and 2. There is insufficient antecedent basis for this limitation in the claim.

19. In claims 21, 23, and 35; the phrase " wiring portions for expanding the pitch among the bonding pads to be wider than the pitch among the bonding pads " is vague and indefinite since it not clear how the pitch of the bonding pads can be wider than the pitch of the bonding pads.

20. Claims 28 and 29 recites the limitation " the areas " in line 3. There is insufficient antecedent basis for this limitation in the claim.

21. Claims 28 and 29 recites the limitation " the bonding electrodes " in line 7. There is insufficient antecedent basis for this limitation in the claim.

22. Claim 28 recites the limitation " the semiconductor chip " in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

23. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

24. Claims 28-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Carpenter (U.S. 5,541,448).

With respect to Claims 28-31, Carpenter teaches first semiconductor devices 58 having protruding terminals formed in the areas of the chips as external terminals, wherein the protruding terminals are use to mount the devices. The protruding external terminals are the leads between the device and the substrate 52. The second devices 58 having outer leads as external terminals, wherein the leads are used to mount the second device. The outer leads are electrically connected to the bonding electrodes of the second devices (see Figs. 5-7). The module board 52 (i.e. substrate) supports the first and second devices 52, 60. The first devices and second devices can be changed without requiring modifications (see col. 5 lines 8-10). Therefore, the first and second devices are mounted in a mixed manner on the module board 52. The DRAMs are mounted as the first device 58 and the EEPROM is mounted as the second device 58 since the devices include DRAMs, SRAMs, ROMs, EPROMs, EEROPOMs, and PROMs or other nonvolatile memory devices (i.e. register) (see Col. 1 lines 19-24 and col. 4 lines 9-23). It is inherent that the plurality of leads (i.e. external terminals) have

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inner and outer portions with wires connecting the chip inside the sealing member to bonding pads located on the chip.

With respect to Claim 32, spaces between the first devices 58 and the board are filled with resin 76 (see col. 4 lines 60-64; Figs. 6 and 7).

With respect to Claim 33, the rear surface of the chip of the first devices 58 is revealed at the upper surface of the first devices (see Figs. 5-7).

Conclusion


25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is cited primarily to show the product of the instant invention.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956.

AC

AC/January 14, 2002


Kluco
Primary Examiner